Recommended Practice for CCTV Camera Coverage and Field of View Criteria for Passenger Facilities

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Abstract: This Recommended Practice provides criteria for CCTV camera coverage and fields of view at transit passenger facilities. CCTV cameras are placed in such a manner as to observe and monitor certain locations to aid in maintaining safe and secure transit environments for people, operations and critical infrastructure.

Keywords: CCTV, camera, facilities, passenger

Introduction

(This introduction is not a part of APTA RP-FS-002-07, Recommended Practice for CCTV Camera Coverage and Field of View Criteria for Passenger Facilities.)

This recommended practice for CCTV camera criteria represents a common viewpoint of transit agencies, governmental organizations, equipment vendors, safety and security consultants, engineers and other interest groups. The application of any standards, practices or guidelines contained herein is voluntary. In some cases, federal and/or state regulations govern portions of a transit agency's operations. In those cases, the government regulations take precedence over these recommended practices or guidelines. APTA recognizes that for certain applications, the recommended practices or guidelines, as implemented by transit agencies, may be either more or less restrictive than those given in this document.

This recommended practice provides criteria for CCTV camera placements at passenger facilities. APTA recommends the use of this recommended practice by the following:

- Individuals or organizations that secure, inspect and maintain transit agencies;
- Individuals or organizations that contract with others for the security, inspection and maintenance of transit agencies; and
- Individuals or organizations that influence how transit agencies are secured, inspected and maintained.

The purpose of an APTA Transit Security Recommended Practice is to ensure that each transit agency achieves a high level of safety and security for passengers, employees and the public. APTA Transit Security Recommended Practices represent an industry consensus of acceptable security practices that should be used by transit agencies. However, APTA recognizes that some transit agencies have unique aspects of their operating environments that may result in less than a complete implementation with every provision of an APTA Transit Security Recommended Practice.

When a transit agency is faced with this situation, it may use its system security plan (SSP) to specify an alternate means to achieve an equivalent level of security as provided by the APTA Transit Security Recommended Practice. The SSP should do the following:

- Identify the Transit Security Recommended Practice provisions that cannot be fully met;
- State why these provisions cannot be fully met;
- Describe the alternate means to ensure that equivalent security is achieved; and
- Provide a reasonable basis (i.e., operating history or threat and vulnerability analysis) for why security is not compromised through the alternate means.

This Recommended Practice is intended to satisfy the following objectives:

a) Help transit agencies select placement locations of CCTV cameras at existing and planned passenger facilities; and

b) Identify recommended CCTV camera coverage considerations and fields of view for different types of passenger facilities.

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1. Overview

Passenger transit facilities have a variety of CCTV camera coverage and field of view needs based on risks identified through a security risk assessment. Examples of areas to consider are stations, parking lots, garages, passenger stops, transit centers and public access areas.

1.1 Scope

This Recommended Practice provides CCTV camera coverage and field of view criteria for different types of passenger facilities (such as transit centers, stations, parking lots, garages and bus stops). It does not cover requirements for administrative and maintenance areas or for inside vehicles.

1.2 Purpose

The purpose of this Recommended Practice is to provide guidance to transit agencies for the coverage and field of view of CCTV cameras at passenger facilities.

2. References

This Recommended Practice should be used in conjunction with the following:

- CCTV camera original equipment manufacturer (OEM) specifications;
- Individual transit agencies' policies and procedures for placing, maintaining and inspecting CCTV cameras; and
- Other related Security Standards, such as APTA Rail Transit Standard RT-S-SC-012-03, Standard for CCTV Inspection, Testing and Maintenance.

For more information/guidance on conducting risk assessments, please reference FTA Public Transportation System Security and Emergency Preparedness Planning Guide, Chapter 5:

http://transit-safety.volpe.dot.gov/Publications/order/singledoc.asp?docid=53

3. Definitions, abbreviations and acronyms

3.1 Definitions

3.1.1 bus stop: A designated location where a transit bus temporarily stops to allow passengers to board or deboard.

3.1.2 field of view (FOV): The area of a scene, observed by a camera and lens combination and measured both horizontally and vertically, that can be seen through the camera. Differing lenses can be configured for wide-angle FOV or barrow FOV depending on requirements and are measured as a ratio of the minimum and maximum ranges of the FOV in either degrees (angular) or millimeters (linear).

3.1.4 mezzanine: An intermediate floor level between the surface/street level and the platform level of a passenger facility.

3.1.5 parking lot: A designated parking area of a passenger facility where passengers park their personal vehicles.

3.1.6 parking garage: Same use/concept as a parking lot, but consisting of a structure with floors or levels on which parking takes place.

3.1.7 passenger facility: A facility used by the passengers as part of their transit journey. Such facilities range from simple bus stops to large, mixed-use multimodal structures and have a wide array of supporting amenities and services.

3.1.8 recognizable image: Image not less than 50 percent of target to screen height ratio when viewed on a monitor without zoom.

3.1.9 risk assessment: A formal, methodical process that evaluates risks to a transit system. The security portion of the risk assessment identifies security threats (both terrorism and crime) to the transit system; evaluates system vulnerabilities to those threats; and determines the consequences to people, equipment and property.

3.1.10 station: A type of public transportation passenger facility designated for the purpose of boarding and deboarding passengers. Station features and amenities may include information/waiting areas, boarding and alighting platforms, ticket/fare card sales, turnstiles or other fare collection equipment, restrooms, concourses, mezzanines, vendor shops and other related facilities.

3.1.11 transit agency: The organization that operates transit service and other related transportation services.

3.2 Abbreviations and acronyms

APTA American Public Transportation Association
CCTV closed-circuit television
FTA Federal Transit Administration
OEM original equipment manufacturer
FOV field of view

4. Risk assessment considerations

Agencies should evaluate risk and use systemwide and asset-specific risk assessments as a guide in determining effective placement of CCTV cameras to maximize coverage.

4.1 Systemwide assessment

Transit systems should refer to their security risk assessments to determine the risks to their systems' assets and the surrounding environment. Transit systems that do not have existing security risk assessments should develop them using current government guidelines.

4.2 Passenger facility risk assessment

To determine specific passenger facility risks, refer to the agency asset's criticality ranking and the security and risk management issues for each specific location being considered.

5. CCTV camera equipment

Consideration of CCTV camera equipment types should be based on APTA Recommended Practice CSCTS-TS-XXX-07 v.9.5: Technical Standard for the Selection of Cameras, Digital Recording Systems and Digital High Speed Train-lines for Use in Transit Related CCTV Systems. Other resources may be available through the DOT and DHS.

6. CCTV camera coverage and field of view criteria

6.1 Stations and transit centers

Stations and transit centers may require the following coverage and fields of view:

6.1.1 Entrances/exits

The CCTV cameras should be placed to view pedestrian and vehicular entrances and exits. There may be multiple entrances and exits that may require camera view at each location. Consideration should be given to bidirectional flow.

6.1.2 General observation

Each station/transit center should have a sufficient number of cameras to provide an overview of the facility. The cameras should avoid obstructions such as structures, shelters, trees and vehicles. When evaluating foliage, consider size of the planting at maturity and seasonal changes. Consideration should be given to ensuring adequate lighting is provided so that cameras provide the best image possible.

6.1.3 Ticket sales, ticket vending machines and turnstiles/gates, station agent kiosks/booths

The cameras should provide a recognizable image of the person(s) involved in the transaction/interaction.

6.1.4 Elevator

Each elevator cab should have a camera mounted in the cab, with the intent to obtain full coverage and field of view of the cab interior and entrance to monitor passenger activity.

6.1.5 Platforms and platform edges

Cameras should provide coverage and field of view of the entire length and width of the platform and platform edge to monitor passenger activity.

6.1.6 Pedestrian passageways/concourses

Cameras should provide coverage and field of view of the entrances, exits and the entire length of the passageway, including stairways, ramps, elevator lobbies and escalators to monitor passenger activity.

6.1.7 Access locations to nonpublic areas (ancillary areas)

Cameras should provide coverage and field of view to monitor nonpublic entrances/exits, including temporary revenue vehicle storage areas.

6.1.8 Restricted area entrances

Cameras should provide coverage and field of view to monitor and identify entrances and access points to restricted rights of way (e.g., tunnel portals from station areas or elevated structures).

6.1.9 Concession areas

Cameras should provide coverage and field of view to monitor concession areas.

6.1.10 Other locations to be considered

Cameras should provide coverage of other locations identified as warranting security monitoring through the systemwide and asset-specific security risk assessments.

7. Parking lots

To maximize the effectiveness of CCTV coverage and field of view, three areas of coverage are recommended:

7.1 Entrances and exits

The CCTV cameras should be placed to monitor pedestrian and vehicular entrances and exits.

7.2 Parking lot general observation

Overview images of the parking areas are recommended for general observation and to detect problems such as criminal acts. Camera placement should be optimized to avoid obstruction by other structures and by foliage. In the case of foliage, the size of the planting at maturity and seasonal changes should be used as a baseline.

7.3 Revenue collection sites

The CCTV camera should be placed to view the point of transaction. The cameras should provide a recognizable image of the person(s) involved in the transaction/interaction.

8. Parking garages

To maximize the effectiveness of CCTV coverage and field of view, four areas of coverage are recommended:

8.1 Entrances and exits

The CCTV cameras should be placed to monitor pedestrian and vehicular entrances and exits.

8.2 Parking garage general observation

Primary areas of coverage and field of view are means of access and egress, all elevator entrances, stairwells, escalators, vending areas and passageways.

Images of the parking garage are recommended for general observation and to detect problems such as criminal acts. Complete overview images of all parking garage areas are difficult to obtain, due to obstructions and support beams.

Camera placement should be optimized to avoid obstruction by structures and by foliage (if any). In the case of foliage, the size of the planting at maturity should be used as a baseline.

8.3 Elevator coverage and field of view

Each elevator cab should have a camera mounted in the cab, with the intent to obtain full coverage and field of view of the cab interior and entrance to monitor passenger activity.

8.4 Revenue collection sites

The cameras should provide a recognizable image of the person(s) involved in the transaction or interaction.

9. Bus stops

Bus stops identified in the security risk assessment as warranting enhanced measures, should be provided CCTV coverage that maximizes the field of view at the stop, its surrounding area including common passenger approaches and the bus boarding location.

10. Other CCTV resources

Coverage and field of view from other existing and planned camera networks such as state (e.g., Department of Transportation), local (e.g., city or county transportation departments), joint use facility security systems, local private businesses and media also should be considered.

11. CCTV camera coverage and field of view documentation

CCTV camera coverage and field of view and fields of view should be documented upon installation and continually monitored, evaluated and updated:

(a) As part of any updated security risk assessments or any new assessments for new passenger facilities;

(b) Based on information from facility maintenance staff; and

(c) As operating conditions change (such as significant ridership increases).